

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of the claims in the application:

1. (Currently Amended) A method for identifying a phase of an incoming ultrawide bandwidth (UWB) signal at a UWB receiver, comprising the steps of:

receiving incoming pulses of the incoming UWB signal, adjacent pulses of said incoming pulses arriving at a predetermined interval;

generating first local pulses at a first detecting arm in the UWB receiver;

generating second local pulses at a second detecting arm in the UWB receiver;

correlating the first and second local pulses with the incoming pulses to produce a correlation function;

selecting ~~a detecting arm~~ one of the first and second detecting arms to identify the phase based on the correlation function and to demodulate data from the incoming UWB signal; and

selecting another of the first and second detecting arms to vary its operational phase and continue to correlate first or second local pulses with the incoming pulses to refine the phase.

2. (Original) A method of claim 1, wherein the predetermined interval is the time between the incoming pulses.

3. (Original) A method of claim 1, wherein the incoming pulses are at least one of bi-phase modulated, and quadrature phase modulated.

4. (Original) A method of claim 3, wherein the incoming pulses are multilevel pulses.

5. (Currently Amended) A method of claim 1, wherein the step of correlating the first and second local pulses with the incoming pulses with the local pulses to produce a correlation function comprises:

shifting a first phase of the first local pulses;

shifting a second phase of the second local pulses; and

calculating a first correlation value of the first local pulses and the incoming pulses; and

calculating a second correlation value of the second local pulses and the incoming pulses,

wherein the first correlation value is greater than the second correlation value.

6. (Currently Amended) A method of claim 5, wherein ~~the correlation value comprises the~~ correlation function comprises the first and second correlation values.

7. (Cancelled)

8. (Currently Amended) A method of claim 7 1, wherein the predetermined threshold is based on a desired bit error rate of the incoming UWB signal.

9. (Currently Amended) A system for identifying a phase of an incoming ultrawide bandwidth (UWB) signal at a UWB receiver, comprising:

an antenna configured to receive incoming pulses of the UWB signal, adjacent pulses of said incoming pulses occurring at a predetermined interval;

a first signal generator configured to generate first local pulses;

a second signal generator configured to generate second local pulses;

a first correlator configured to correlate the incoming pulses with the first local pulses to produce ~~an~~ a first correlation function, and configured to demodulate data from the incoming UWB signal;

a second correlator configured to correlate the incoming pulses with the second local pulses to produce a second correlation function, and configured to demodulate data from the incoming UWB signal; and

a selector configured to select ~~a detecting arm~~ one of the first and second correlators to identify the phase based on the first and second correlation function functions and to demodulate data from the incoming UWB signal, and to select another of the first and second correlators to perform a phase refining function.

10. (Original) A system of claim 9, wherein the predetermined interval is a distance between the incoming pulses in time.

11. (Original) A system of claim 9, wherein the incoming pulses are at least one of bi-phase modulated, and quadrature phase modulated.

12. (Original) A system of claim 11, wherein the incoming pulses are multilevel pulses.

13. (Currently Amended) A system of claim 9, wherein the first correlator comprises:
a phase adjuster configured to adjust a phase of the first local pulses; and

a calculator configured to calculate ~~an~~ a first correlation value of the first local pulses ~~pulse~~ and the incoming pulses ~~pulse~~.

14. (Currently Amended) A system of claim 13, wherein ~~a plurality of the correlation value~~ comprises the first correlation function comprises a plurality of first correlation values.

15. (Original) A system of claim 9, wherein the selector comprises:

a calculator configured to find a first correlation value for a first detecting arm that exceeds a predetermined threshold and a second correlation value for a second detecting arm that exceeds the predetermined threshold; and

a comparator configured to compare the first correlation value to the second correlation value to select the detecting arm with a higher correlation value.

16. (Original) A system of claim 15, wherein the predetermined threshold is based on a desired bit error rate of the incoming UWB signal.

17. (Currently Amended) A system for identifying a phase of an incoming ultrawide bandwidth (UWB) signal at a UWB receiver, comprising:

means for receiving incoming pulses of the incoming UWB signal, adjacent pulses of said incoming pulses arriving at a predetermined interval;

means for generating first local pulses at the UWB receiver;

means for correlating the first local pulses with the incoming pulses to produce a first correlation function, and for demodulating data from the incoming UWB signal;

means for generating second local pulses at the UWB receiver;

means for correlating the second local pulses with the incoming pulses to produce a second correlation function, and for demodulating the data from the incoming UWB signal; and

means for selecting a ~~detecting arm~~ one of the first and second detecting arms to identify the phase and demodulate the data from the incoming UWB signal based on the correlation function first and second correlation functions, and for selecting another of the first and second detecting arms to continue to produce either a first or second correlation function.

18. (Currently Amended) A method ~~of claim 1~~ for identifying a phase of an incoming ultrawide bandwidth (UWB) signal at a UWB receiver, comprising the steps of:

receiving incoming pulses of the incoming UWB signal, adjacent pulses of said incoming pulses arriving at a predetermined interval;

generating local pulses at the UWB receiver;

correlating the local pulses with the incoming pulses to produce a correlation function; and

selecting a detecting arm to identify the phase based on the correlation function,

wherein the step of selecting a detecting arm to identify the phase based on the correlation function comprises:

finding a first correlation value for a first detecting arm that exceeds a predetermined threshold;

decreasing the predetermined threshold until the first correlation value is found;

finding a second correlation value for a second detecting arm that exceeds the predetermined threshold; and

comparing the first correlation value to the second correlation value to select the detecting arm with a higher correlation value.

19. (Original) A method of claim 18, wherein the predetermined threshold is based on a desired bit error rate of the incoming UWB signal.

20. (Original) A method of claim 1, wherein the step of selecting a one of the first and second detecting arm to identify the phase based on the correlation function comprises:

finding a first correlation value for a first detecting arm that exceeds a predetermined threshold;

determining a first phase corresponding to the first correlation value;

finding a second correlation value for a second detecting arm that exceeds the predetermined threshold over a phase range beginning with the first phase; and

comparing the first correlation value to the second correlation value to select the detecting arm with a higher correlation value.

21. (Cancelled)

22. (Currently Amended) A system of ~~claim 9~~ for identifying a phase of an incoming ultrawide bandwidth (UWB) signal at a UWB receiver, comprising:

an antenna configured to receive incoming pulses of the UWB signal, adjacent pulses of said incoming pulses occurring at a predetermined interval;

a signal generator configured to generate local pulses;

a correlator configured to correlate the incoming pulses with the local pulses to produce an correlation function; and

a selector configured to select a detecting arm to identify the phase based on the correlation function,

wherein the selector comprises:

a calculator configured to find a first correlation value for a first detecting arm that exceeds a predetermined threshold and a second correlation value for a second detecting arm that exceeds the predetermined threshold;

a subtractor configured to decrease the predetermined threshold until the first correlation value is found; and

a comparator configured to compare the first correlation value to the second correlation value to select the detecting arm with a higher correlation value.

23. (Original) A system of claim 22, wherein the predetermined threshold is based on a desired bit error rate of the incoming UWB signal.

24. (Original) A system of claim 9, wherein the selector comprises:

a calculator configured to find a first correlation value for a first detecting arm that exceeds a predetermined threshold and a second correlation value for a second detecting arm that exceeds the predetermined threshold over a phase range beginning with a first phase;

a detector configured to determine the first phase corresponding to the first correlation value; and

a comparator configured to compare the first correlation value to the second correlation value to select the detecting arm with a higher correlation value.

25. (Original) A system of claim 24, wherein the predetermined threshold is based on a desired bit error rate of the incoming UWB signal.

26. (New) A method for processing an incoming ultrawide bandwidth (UWB) signal at a UWB receiver, comprising the steps of:

receiving incoming pulses of the incoming UWB signal;

generating first local pulses at the UWB receiver at a first phase in a first detecting arm;

correlating the first local pulses with the incoming pulses in the first detecting arm to produce a first correlation function;

comparing the first correlation function with a predetermined threshold;

tracking the phase of the incoming signal and demodulating data from the incoming UWB signal with the first arm using the first phase, if the first correlation function is greater than the predetermined threshold;

generating second local pulses at the UWB receiver at a second phase different from the first phase in a second detecting arm, after comparing the first correlation function with the predetermined threshold;

correlating the second local pulses with the incoming pulses to produce a second correlation function;

comparing the first correlation function with the second correlation function; and

tracking the phase of the incoming signal and demodulating the data from the incoming UWB signal with the second arm using the second phase if the second correlation function is greater than the first correlation function.

27. (New) A method of claim 26, further comprising incrementing the second phase by a phase increment and repeating the steps of tracking the phase of the incoming signal with the first arm, generating second local pulses at the UWB receiver at a second phase, correlating the second local pulses, and comparing the first correlation function with the second correlation function, if the second correlation function is not greater than the first correlation function.

28. (New) A method of claim 26, wherein when the second correlation function is greater than the first correlation function, the method further comprises:

varying the first phase to a new first phase; and

generating new first local pulses at the UWB receiver at the new first phase in the first detecting arm;

correlating the new first local pulses with the incoming pulses to produce a new first correlation function;

comparing the new first correlation function with the second correlation function,

wherein the new first phase is different from the second phase.

29. (New) A system for processing an incoming ultrawide bandwidth (UWB) signal at a UWB receiver, comprising:

an antenna configured to receive incoming pulses of the UWB signal;

a first detecting arm including:

a first signal generator configured to generate first local pulses, and

a first tracking correlator configured to correlate the incoming pulses with the first local pulses to produce a first correlation function, and configured to demodulate data from the incoming UWB signal;

a second detecting arm including:

a second signal generator configured to generate second local pulses;

a second tracing correlator configured to correlate the incoming pulses with the second local pulses to produce a second correlation function, and configured to demodulate the data from the incoming UWB signal; and

a selector configured to select one of the first and second detecting arms to identify a phase of the incoming UWB signal based on the first and second correlation functions and to demodulate the data from the incoming UWB signal, and configured to select another of the first and second detecting arms to continue to produce either a first or second correlation function.

30. (New) A method of claim 5, wherein the correlation function is determined based on the first and second correlation values.